

## NOTE

### OWNING THE CENTER OF THE EARTH: HYDRAULIC FRACTURING AND SUBSURFACE TRESPASS IN THE MARCELLUS SHALE REGION

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*Hydraulic fracturing, a drilling technology that involves directional drilling and the propagation of pressurized fluid to fracture shale, has made the extraction of natural gas from the Marcellus Shale in the Northeastern United States an economically viable venture. Despite its potential economic benefits, hydraulic fracturing has inflamed public opinion over its possible environmental effects (for example, ground-water contamination). One concern, sometimes overlooked in the public debate, is the effect hydraulic fracturing may have on the property rights of landowners with property adjacent to the drilling site.*

*Hydraulic fracturing has been used for decades in Texas and other prolific oil and gas producing states. In these states the courts have haphazardly addressed the property rights of landowners whose property has been encroached on by hydraulic fracturing on adjacent plots. Several of these courts have applied the rule of capture and the correlative rights doctrine to determine landowners' property rights, while others have applied the non-ownership theory. Because hydraulic fracturing is new to the Marcellus Shale region states and, as such, they lack a developed body of case law, these states—especially New York—should treat the issue as one of first impression. States in the Marcellus Shale region should consider the issue de novo and apply well-established property theories that accord with the public policy of the state. This Note suggests that through the application of subsurface trespass theory and consideration of case law regarding drilling processes analogically similar to hydraulic fracturing—such as directional drilling, secondary recovery and storage operations, and coal and coalbed methane gas extraction—*

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*courts and state legislatures have the opportunity to create law which best reflects the needs and values of the Marcellus Shale region states.*

INTRODUCTION..... 458

I. HYDRAULIC FRACTURING TECHNOLOGY ..... 460

II. THE DEVELOPMENT OF MODERN OIL AND GAS LAW:  
THEORIES OF OWNERSHIP ..... 461

A. *The Ad Coelum Doctrine* ..... 462

    1. The Rule of Capture ..... 463

    2. Correlative Rights Doctrine ..... 465

B. *Ownership-in-Place Doctrine* ..... 466

C. *Non-Ownership Theory* ..... 468

III. A LEGAL REMEDY: SUBSURFACE TRESPASS ..... 470

A. *Trespass* ..... 470

B. *Subsurface Trespass Caused by Hydraulic  
Fracturing* ..... 472

IV. ANALOGICALLY SIMILAR PROCESSES ..... 474

A. *Directional Drilling* ..... 475

B. *Secondary Recovery and Storage Operations* ..... 478

C. *Coal and Coalbed Methane Gas* ..... 481

    1. Coal ..... 482

    2. Coalbed Methane Gas ..... 483

CONCLUSION..... 486

INTRODUCTION

The prospect of employing hydraulic fracturing<sup>1</sup> technology to drill for natural gas in the Northeastern United States has sparked an intense legal debate over the socioeconomics of land development, the environmental effects of hydraulic fracturing, and individual property rights.<sup>2</sup> The Marcellus Shale, “a black shale formation extending deep underground from Ohio and West Virginia northeast into Pennsylvania and southern New York,” may contain up to 489 trillion cubic feet of natural gas.<sup>3</sup> The low porosity, permeability, and depth of the Marcellus Shale

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<sup>1</sup> “Hydraulic fracturing consists of pumping a fluid and a propping material such as sand down the well under high pressure to create fractures in the gas-bearing rock. The propping material . . . holds the fractures open, allowing more gas to flow into the well than would naturally . . . Hydraulic fracturing technology is especially helpful for ‘tight’ rocks like shale.” N.Y. STATE DEP’T OF ENVTL. CONSERVATION, *Marcellus Shale*, <http://www.dec.ny.gov/energy/46288.html> (last visited Sept. 10, 2011).

<sup>2</sup> The *New York Times* recently published “Drilling Down,” a series of articles highlighting the benefits, risks, and politics surrounding hydraulic fracturing. See Ian Urbina, *Pressure Stifles Efforts to Police Drilling for Gas*, N.Y. TIMES, Mar. 4, 2011, at A1, available at <http://www.nytimes.com/2011/03/04/us/04gas.html?ref=drillingdown>.

<sup>3</sup> N.Y. STATE DEP’T OF ENVTL. CONSERVATION, *Marcellus Shale*, *supra* note 1.

make hydraulic fracturing the preferred method of extracting natural gas from the shale.<sup>4</sup> For many landowners, the prospect of leasing land for drilling represents a “modern-day gold rush” that could provide relief to struggling farmers, create jobs for citizens, and produce much needed clean energy.<sup>5</sup> Other individuals are concerned with the possible relinquishment of land rights and the unknown, potentially negative, environmental impact caused by hydraulic fracturing, a relatively new technology.<sup>6</sup>

While Texas and other prolific oil and gas producing states have used hydraulic fracturing to extract oil and gas in tight reservoir formations for over sixty years,<sup>7</sup> the technology only recently has advanced sufficiently to make extracting natural gas from the dense Marcellus Shale profitable.<sup>8</sup> As such, the regional impacts of hydraulic fracturing are relatively unknown<sup>9</sup> and the legal doctrine is ripe for development and interpretation. Though providing some legal guidance,<sup>10</sup> other oil and gas producing states’ application of oil and gas laws and public policy should not unduly influence the Marcellus Shale region states’ development or interpretation of the doctrine regarding hydraulic fracturing. These states’ doctrinal interpretations often reflect outdated surveying and drilling technologies that are not employed in this region.<sup>11</sup> Because this new technology enables the possibility and profitability of drilling in the Marcellus Shale region, the development of legal precedent in the area should reflect the significant geological, historical, and technological differences between the Marcellus Shale states and other oil and gas producing states.

Section I of this Note introduces the technology used to hydraulically fracture shale rock formations. Section II provides an overview of the development of oil and gas law and the property theories governing oil and gas ownership. Section III posits how the doctrine of subsurface

<sup>4</sup> See *id.*

<sup>5</sup> Mireya Navarro, *At Odds Over Land, Money and Gas*, N.Y. TIMES, Nov. 28, 2009, at A14, available at <http://www.nytimes.com/2009/11/28/science/earth/28drill.html?pagewanted=all>.

<sup>6</sup> See *id.*

<sup>7</sup> See e.g., Laura H. Burney & Norman J. Hyne, *Hydraulic Fracturing: Stimulating Your Well or Trespassing?*, 44 ROCKY MTN. MIN. L. INST. §§ 19.01, 19.02 (1998) (“The first frac job was done by Pan American Petroleum (Amoco) on a well in the Hugoton gas field in Kansas. Haliburton [sic] was granted an exclusive license for hydraulic fracturing in 1949. This exclusive license was withdrawn in 1953 and now many service companies offer the service.”).

<sup>8</sup> See N.Y. STATE DEP’T OF ENVTL. CONSERVATION, *Marcellus Shale*, *supra* note 1.

<sup>9</sup> See N.Y. STATE DEP’T OF ENVTL. CONSERVATION, SUPPLEMENTAL GENERIC ENVIRONMENTAL IMPACT STATEMENT ON THE OIL, GAS AND SOLUTION MINING REGULATORY PROGRAM 9–16 (rev. drft. Sept. 7, 2011), <http://www.dec.ny.gov/data/dmn/rdsgeisfull0911.pdf>.

<sup>10</sup> See Burney & Hyne, *supra* note 7, § 19.04.

<sup>11</sup> See *id.*

trespass may provide legal protection to landowners wishing to protect their subsurface estate from hydraulic fracturing. Section IV provides an overview of case law addressing hydraulic fracturing, subsurface trespass, and analogically similar processes. Finally, this Note concludes that New York State should adopt a rule of subsurface trespass that accounts for modern technology and the development of the oil and gas industry in the Marcellus Shale region.

## I. HYDRAULIC FRACTURING TECHNOLOGY

Hydraulic fracturing, commonly referred to as “fracking,” is used to release oil and gas from “tight” shale and other sedimentary rocks.<sup>12</sup> Though seemingly simple, hydraulic fracturing involves several steps.<sup>13</sup> Prior to hydraulic fracturing, a well is drilled vertically.<sup>14</sup> Once the well reaches the depth of the shale, special tools are used to continue drilling the well horizontally within the shale.<sup>15</sup> Hydraulic fracturing is accomplished by pumping pressurized fluid down the well to fracture the reservoir rock.<sup>16</sup> This process releases oil and gas from the shale and “creates channels for the oil and gas to flow through the reservoir into the well.”<sup>17</sup> In the article *Hydraulic Fracturing: Stimulating Your Well or Trespassing?*, Laura H. Burney and Norman J. Hyne provide a detailed description of the hydraulic fracturing process:

Frac jobs are done in three stages. First, a volume of the frac fluid called the pad is pumped under pressure down the well to initiate and propagate fractures in the reservoir rock. During the second stage, a slurry of the frac fluid and propping agents (proppants) is pumped down the well to extend the fractures and carry the propping agents deep into the fractures. In the last stage called backflush, the frac fluid is pumped back up the well leaving the propping agents to hold open the fractures.<sup>18</sup>

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<sup>12</sup> *Id.* § 19.02 (“The term tight sands has been used to include all low permeability reservoirs such as siltstones, shales, and carbonates.”).

<sup>13</sup> See *infra* Figure 1 and text accompanying notes 12–22 for an illustration of the hydraulic fracturing process.

<sup>14</sup> See N.Y. STATE DEP’T OF ENVTL. CONSERVATION, *Marcellus Shale*, *supra* note 1.

<sup>15</sup> See *id.*

<sup>16</sup> See Burney & Hyne, *supra* note 7, § 19.02, at 19–12 (“Up to seven or eight additives are commonly used in the frac fluids. These include fluid-loss additives, biocides, breakers, buffers, surfactants, nonemulsifiers, clay stabilizers, foamers, friction reducers, temperature stabilizers, and diverting agents.”).

<sup>17</sup> *Id.* § 19.02.

<sup>18</sup> *Id.*

Modern science and technology make the volume and length of the fractures predictable<sup>19</sup> before the shale is fractured: “The volume of the fractures (height x length x width) is directly proportional to the volume of the frac fluid pumped.”<sup>20</sup> Although more difficult to predict, the “length of the fracture is inversely related to the height of the fracture. Lower fracture heights correspond to longer fractures with the same volume of frac fluid pumped.”<sup>21</sup> Oil and gas flow through the hydraulically created fractures to the well.<sup>22</sup>

The Marcellus Shale is rich in natural gas.<sup>23</sup> The gas is trapped between 2,000 feet to 7,000 feet below the earth’s surface.<sup>24</sup> Generally, hydraulic fracturing increases well production by 5% to 15%.<sup>25</sup> In the case of the Marcellus Shale, hydraulic fracturing is perhaps the only economically viable option to recover oil and gas.<sup>26</sup>

## II. THE DEVELOPMENT OF MODERN OIL AND GAS LAW: THEORIES OF OWNERSHIP

At the 2011 Energy Conference hosted by Cornell Law School, attorney Helen Slottje argued that an examination of what *rights* property owners hold in their property must precede any determination of what legal remedies are available to them.<sup>27</sup> While this Note focuses primarily on whether trespass law provides landowners a legal remedy against subsurface intrusion caused by hydraulic fracturing, this question intrinsically is linked to theories of property ownership. Property law defines and protects interests in physical property; control over surface acreage alone does not delineate ownership.<sup>28</sup> The concept of “[o]wnership con-

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<sup>19</sup> *Id.* During the 2011 Energy Conference held at Cornell Law School, William Kappel, a hydrogeologist, commented that the fractures created by hydraulic fracturing are “paper thin” and that through micro-seismic monitoring the specific details about the fracture can be determined before the fracture and measured thereafter. See William Kappel, U.S. Geological Survey, Remarks at the Cornell Law School 2011 Energy Conference: Gas Drilling, Sustainability & Energy Policy (Apr. 2, 2011), <http://streams.lawschool.cornell.edu/mediasite/Viewer/?peid=48442bc606ca4eddb47b32bdaae657e61d>.

<sup>20</sup> Burney & Hyne, *supra* note 7, § 19.02.

<sup>21</sup> *Id.*

<sup>22</sup> *Id.*

<sup>23</sup> See N.Y. STATE DEP’T OF ENVTL. CONSERVATION, *Marcellus Shale*, *supra* note 1.

<sup>24</sup> *See id.*

<sup>25</sup> *See* Burney & Hyne, *supra* note 1, § 19.02.

<sup>26</sup> *See* N.Y. STATE DEP’T OF ENVTL. CONSERVATION, *Marcellus Shale*, *supra* note 1.

<sup>27</sup> *See* Helen Slottje, Cmty. Envtl. Def. Council, Remarks at the Cornell Law School 2011 Energy Conference: Gas Drilling, Sustainability & Energy Policy (Apr. 2, 2011), <http://streams.lawschool.cornell.edu/mediasite/Viewer/?peid=48442bc606ca4eddb47b32bdaae657e61d>.

<sup>28</sup> *See* A.W. Walker, Jr., *Nature of the Landowner’s Interest in Oil and Gas*, 17 MONT. L. REV. 22, 22 (1955–1956).

sists not of the physical property itself, but of a complex group or bundle of legally enforceable rights, powers and privileges with respect to that physical property.”<sup>29</sup> Simply said, landowners are entitled to a legal remedy only if subsurface oil and gas estates are sticks in the proverbial bundle. Therefore, theories of property ownership provide a basis for determining landowners’ rights and remedies against trespass.<sup>30</sup>

Over time, changes in land use, technology, and public policy have modified the legal theories of property ownership. The development of the oil and gas industry profoundly altered the way courts applied the *ad coelum* doctrine.<sup>31</sup> The *ad coelum* doctrine gave way to the introduction of the rule of capture and the correlative rights doctrine, and the eventual evolution of the ownership-in-place and non-ownership theories, which currently govern oil and gas ownership in most states.<sup>32</sup> When these two ownership theories first developed, courts lacked common law precedent and scientific information regarding the nature of subsurface oil and gas.<sup>33</sup> Much of oil and gas law developed through analogy to the ownership of other physical substances—such as water, wild animals, and coal.<sup>34</sup>

### A. *The Ad Coelum Doctrine*

Prior to the development of the commercial oil and gas industry and the implementation of policies encouraging production thereof, the common law followed the *ad coelum* doctrine: *cujus est solum, ejus est usque ad coelum et ad inferos*.<sup>35</sup> According to the *ad coelum* doctrine, land ownership extended from the core of the earth to the sky.<sup>36</sup> The advent of the commercial oil and gas industry in the 1850s led to significant changes to the doctrine.<sup>37</sup> While the doctrine was easily applied to “hard” minerals, the transitory nature of oil and gas made application of the *ad coelum* doctrine impracticable.<sup>38</sup> As many courts have stated: “It is ancient doctrine that [ ] common law ownership of the land extended

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<sup>29</sup> *Id.*

<sup>30</sup> *See id.* at 23–25.

<sup>31</sup> *See* Terry D. Ragsdale, *Hydraulic Fracturing: The Stealthy Subsurface Trespass*, 28 TULSA L.J. 311, 313–14 (1993).

<sup>32</sup> *See* 1 HOWARD R. WILLIAMS & CHARLES J. MEYERS, OIL AND GAS LAW § 203, at 26–32 (2010). The qualified ownership and ownership in place theories also developed from the *ad coelum* doctrine. These theories are mostly of academic interest and are applied in only a very few states. *See id.* §§ 203.2–203.3.

<sup>33</sup> Walker, *supra* note 28, at 23.

<sup>34</sup> *See id.*

<sup>35</sup> Ragsdale, *supra* note 31, at 313 (“[O]wnership of the surface extended upwards to the heavens and downwards to the center of the earth.”).

<sup>36</sup> *See id.*

<sup>37</sup> *See id.*

<sup>38</sup> *See* JOHN S. LOWE, OIL AND GAS LAW IN A NUTSHELL 9 (4th ed. 2003) (“Oil and gas are fugacious; they move from place to place within sedimentary rock. In addition, oil and gas

to the periphery of the universe . . . But that doctrine has no place in the modern world.”<sup>39</sup> States’ adoption of policies encouraging commercial oil and gas production drove courts to interpret laws in favor of production and to limit landowners’ individual property rights. States feared that the continued application of the *ad coelum* doctrine would deter or slow oil and gas development: “Mineral owners would have been discouraged from drilling by the fear of liability for drainage from their neighbors’ properties.”<sup>40</sup> Addressing these concerns, courts adapted the *ad coelum* doctrine by applying the rule of capture and by distinguishing oil and gas ownership from ownership of other solid minerals.<sup>41</sup>

### 1. The Rule of Capture

The common law rule of capture holds that “[T]he first person to reduce subsurface oil or gas to physical possession [becomes] the owner of [the] same regardless of whether the product was in fact extracted from beneath the surface of that person’s property.”<sup>42</sup> However, the rule of capture assumes that oil and gas migrate within reservoirs and between property lines.<sup>43</sup> The Texas Supreme Court described the rule of capture in *Elliff v. Texon Drilling Co.*:

[C]ourts generally have come to recognize that oil and gas, as commonly found in underground reservoirs, are securely entrapped in a static condition in the original pool, and, ordinarily, so remain until disturbed by penetrations from the surface. It is further established, nevertheless, that these minerals will migrate across property

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are fungible; it is difficult to determine whether a given MCF [metric cubic foot] of gas or barrel of oil produced has been drawn from under one tract of land or another.”)

<sup>39</sup> *Laird v. Nelms*, 406 U.S. 797, 799 (1972) (quoting *United States v. Causby*, 328 U.S. 256, 260–61 (1946)). The *ad coelum* doctrine has been modified or disregarded all together in other areas of property ownership; for example, the use of the doctrine regarding ownership of airspace has been significantly limited. See Owen L. Anderson, *Subsurface “Trespass”: A Man’s Subsurface is Not His Castle*, 49 WASHBURN L.J. 247, 253–54 (2010) (“Airplane trespass cases have universally rejected a strict adherence to the *ad coelum* doctrine. In general, the use of airspace by airplanes is not actionable, unless a landowner suffers actual damages.”).

<sup>40</sup> *LOWE*, *supra* note 38, at 8–9.

<sup>41</sup> See *Ragsdale*, *supra* note 31, at 314–16.

<sup>42</sup> *In re W. Land Servs., Inc. v. Dep’t of Env’tl. Conservation*, 26 A.D.3d 15, 16–17 (N.Y. App. Div. 3d Dep’t 2005).

<sup>43</sup> See *ANR Pipeline Co. v. 60 Acres of Land*, 418 F. Supp. 2d 933, 939 (W.D. Mich. 2006). The assumption that gas migrates between property lines is inherent in the rule of capture. However, in the case of the Marcellus Shale, gas does not migrate prior to the physical trespass. Rather it is the trespass itself which releases the gas from the tight shale pores that enables the gas to migrate. See N.Y. STATE DEP’T OF ENVTL. CONSERVATION, *Marcellus Shale*, *supra* note 1. As discussed *infra* in Section IV, this fundamental difference in geologic structure suggests that shale gas should not be treated the same as other truly fugacious substances.

lines towards any low pressure area created by production from the common pool. This migratory character of oil and gas has given rise to the so-called rule or law of capture. That rule simply is that the owner of a tract of land acquires title to the oil or gas which he produces from wells on his land, though part of the oil or gas may have migrated from adjoining lands. He may thus appropriate the oil and gas that have flowed from adjacent lands without the consent of the owner of those lands, and without incurring liability to him for drainage.<sup>44</sup>

As applied, the rule of capture limits landowners' liability for draining reservoirs spanning across property lines, thereby encouraging oil and gas production.<sup>45</sup> According to the rule of capture, a non-consenting landowner's remedy against drainage from a common oil or gas pool is one of self-help—landowners have the option to “go and do likewise.”<sup>46</sup> Application of the rule of capture encourages a race to drill, which historically has “resulted in the drilling of excessive wells, which, in turn, created considerable waste.”<sup>47</sup>

While theoretically the rule of capture shields drillers from liability for drainage from a common pool, in application this protection is not without limits.<sup>48</sup> For example, regardless of the theory of ownership adopted, the rule of capture does not permit trespass.<sup>49</sup> As Caleb Fielder comments, “in the hunt for oil and gas[,] one may not violate the subsurface boundaries dividing disparate mineral estates in the name of the rule of capture.”<sup>50</sup> Moreover, the correlative rights doctrine and statutory limitations to the rule of capture may protect those with a property interest in the common gas or oil source.<sup>51</sup>

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<sup>44</sup> *Elliff v. Texon Drilling Co.*, 210 S.W.2d 558, 561–62 (Tex. 1948). See Ragsdale, *supra* note 31, at 313–14.

<sup>45</sup> See *Elliff*, 210 S.W.2d at 562.

<sup>46</sup> See *ANR Pipeline*, 418 F. Supp. 2d at 940 (quoting *Wronski v. Sun Oil Co.*, 279 N.W.2d 564, 569 (Mich. Ct. App. 1979)).

<sup>47</sup> *W. Land Servs.*, 26 A.D.3d at 17.

<sup>48</sup> See Bruce M. Kramer, *Coastal Oil & Gas Corp. v. Garza Energy Trust, Some New Paradigms for the Rule of Capture and Implied Covenant Jurisprudence*, 30 ENERGY & MIN. L. INST. 330, 333 (2009).

<sup>49</sup> See *id.* at 336–41.

<sup>50</sup> Caleb Fielder, *I Drink Your Milkshake: The Status of Hydraulic Fracture Stimulation in the Wake of Coastal v. Garza*, 46 ROCKY MTN. MIN. L. INST. 17, 25 (2009).

<sup>51</sup> See WILLIAMS & MEYERS, *supra* note 32, § 204.6, at 60.8–60.11. Statutorily imposed limitations vary among states and are beyond the scope of this paper.



## 2. Correlative Rights Doctrine

The correlative rights doctrine limits the liability shield created by the rule of capture and addresses concerns of fairness and waste.<sup>52</sup> Under this doctrine, “each owner has a right to a fair and equitable share of the oil and gas under his land.”<sup>53</sup> In the classic case of *Elliff v. Texon Drilling Co.*,<sup>54</sup> the Texas Supreme Court detailed the corollary relationship between the rule of capture and the correlative rights doctrine.<sup>55</sup> The respondent, Texon Drilling, negligently allowed one of its wells to blow out and burn.<sup>56</sup> The well, located on property adjoining the petitioner’s, drained from a common pool; subsequent to the blow-out, the well drained from the petitioner’s property.<sup>57</sup> The petitioner sued for damages and lost oil and gas.<sup>58</sup> Texon defended by asserting that the rule of capture protected it from any liability for drainage.<sup>59</sup> The Texas Supreme Court rejected Texon’s argument: “No owner should be permitted to carry on his operations in reckless or lawless irresponsibility, but must submit to such limitations as are necessary to enable each to get his own”<sup>60</sup> The court further explained the underlying rationale and function of the correlative rights doctrine:

These existing property relations, called the correlative rights of the owners of land in the common source of supply, were not created by the statute, but held to exist because of the peculiar physical facts of oil and gas. The term “correlative rights” is merely a convenient method of indicating that each owner of land in a common source of supply of oil and gas has legal privileges as against other owners of land therein to take oil or gas therefrom by lawful operations conducted on his own land; that each such owner has duties to the other owners not to exercise his privileges of taking so as to injure the common source of supply; and that each such owner has rights that other owners not exercise their privileges of taking so as to injure the common source of supply.<sup>61</sup>

In sum, the correlative rights doctrine augments the rule of capture to provide that each property owner sharing a common source has a fair

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<sup>52</sup> See *LOWE*, *supra* note 38, at 14–15.

<sup>53</sup> *Id.* at 14.

<sup>54</sup> 210 S.W.2d 558 (Tex. 1948).

<sup>55</sup> See *id.* at 562–63.

<sup>56</sup> See *id.* at 559.

<sup>57</sup> See *id.*

<sup>58</sup> See *id.*

<sup>59</sup> See *id.* at 559–60.

<sup>60</sup> *Id.* at 562.

<sup>61</sup> *Id.* at 562–63 (quoting 1 W.L. SUMMERS, *THE LAW OF OIL AND GAS* § 63 (perm. ed.)).

chance to produce oil and gas from the reservoir.<sup>62</sup> Several states have statutorily adopted this doctrine.<sup>63</sup> Generally, landowners are entitled to a share of the oil or gas based on the “proportion that the quantity of recoverable oil and gas under his or her land bears to the quantity in the reservoir.”<sup>64</sup>

### B. *Ownership-in-Place Doctrine*

The ownership-in-place doctrine is a close relative of the *ad coelum* doctrine; in developing this doctrine, courts likened oil and gas to soil and other hard minerals.<sup>65</sup> Courts “rationalized that since oil and gas were a part of the soil, they were owned in place by the owner of the land in addition to the [landowner’s] exclusive right to explore for, develop, and produce [oil and gas].”<sup>66</sup> In *Wronski v. Sun Oil Co.*,<sup>67</sup> the Court of Appeals of Michigan explained the ownership-in-place doctrine:

Under this theory “the nature of the interest of the landowner in oil and gas contained in his land is the same as his interest in solid minerals.” Solid minerals are a part of the land in or beneath which they are located, and as a consequence the owner of land is also the owner of the oil and gas in or beneath it.<sup>68</sup>

Texas and many other prolific oil and gas producing states have adopted the ownership-in-place theory.<sup>69</sup> In 1923, the Texas Supreme Court explained in *Stephens County v. Mid-Kansas Oil & Gas Co.*,<sup>70</sup> an oft-quoted decision, that according to the ownership-in-place theory, no “distinction in principle lies between the title acquired under a grant of solid minerals and the title acquired under a grant in the same form of gas and oil.”<sup>71</sup> Moreover, the court opined that “gas and oil in place are minerals and realty, subject to ownership, severance and sale, while embedded in the sands or rocks beneath the earth’s surface, in like manner and to the same extent as is coal or any other solid mineral.”<sup>72</sup>

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<sup>62</sup> *See id.*

<sup>63</sup> *See, e.g.*, N.Y. ENVTL. CONSERV. LAW § 23-0301 (McKinney 2007).

<sup>64</sup> *LOWE, supra* note 38, at 15.

<sup>65</sup> *See id.* at 29–30.

<sup>66</sup> *Id.* at 30.

<sup>67</sup> 279 N.W.2d 564 (Mich. Ct. App. 1979).

<sup>68</sup> *Id.* at 569 (quoting WILLIAMS & MEYERS, *supra* note 32, § 203.3); *accord* Carbon County v. Union Reserve Coal Co., 898 P.2d 680, 685 (Mont. 1995); *Stephens County v. Mid-Kansas Oil & Gas Co.*, 254 S.W. 290, 292 (Tex. 1923).

<sup>69</sup> *See* WILLIAMS & MEYERS, *supra* note 32, § 203.1.

<sup>70</sup> 254 S.W. 290 (Tex. 1923).

<sup>71</sup> *Id.* at 292.

<sup>72</sup> *Id.*

CHART 1:

<b>Chart 1 Ownership Theories Applied to Shale States,</b> 1 HOWARD R. WILLIAMS & CHARLES J. MEYERS, OIL AND GAS LAW § 203 at 32 (2010).		
<b>Shale Development</b>	<b>State</b>	<b>Ownership Theory</b>
Barnett	Texas	Ownership-in-Place
Fayetteville	Arkansas	Ownership-in-Place
Haynesville	Louisiana	Non-Ownership
	Texas	Ownership-in-Place
Marcellus	New York	Non-Ownership
	Pennsylvania	Ownership-in-Place
	Ohio	Non-Ownership
	Maryland	Ownership-in-Place
	West Virginia	Ownership-in-Place
Antrim	Michigan	Ownership-in-Place
	Ohio	Ownership-in-Place
	Indiana	Non-Ownership
New Albany	Indiana	Non-Ownership
	Kentucky	Non-Ownership
	Illinois	Non-Ownership

Furthermore, migratory minerals are subject to the rule of capture. In *Wronski*, the court explained the relationship between the ownership-in-place doctrine and the rule of capture:

Oil and gas, unlike other minerals, do not remain constantly in place in the ground, but may migrate across property lines. Because of this migratory tendency the rule of capture evolved.

This rule provides: “The owner of a tract of land acquires title to the oil and gas which he produces from wells drilled thereon, though it may be proved that part of such oil or gas migrated from adjoining lands. Under this rule, absent some state regulation of drilling practices, a landowner is not liable to adjacent landowners whose lands are drained as a result of such operations.”<sup>73</sup>

The ownership-in-place doctrine vests a corporeal right—a right of current possession—in the landowner.<sup>74</sup> This ownership right terminates

<sup>73</sup> 279 N.W. at 569 (quoting WILLIAMS & MEYERS, *supra* note 32, § 204.4).

<sup>74</sup> See *id.*

if the oil or gas migrates from the landowner's parcel.<sup>75</sup> Under this theory, ownership of minerals, including fugacious oil and gas, rests with the landowner.<sup>76</sup>

### C. *Non-Ownership Theory*

The development of the oil and gas industry and the common law adoption of the rule of capture led some courts to analogize transitory minerals to wild animals and water.<sup>77</sup> Focusing on the migratory nature of oil and gas, courts treated oil and gas as *ferae naturae* ("of a wild nature")<sup>78</sup> and applied the rule of capture to oil and gas in the same manner as they had to wild animals.<sup>79</sup> These early courts "sought to justify departing from precedent by distinguishing ownership of oil and gas from other [non-migratory] substances found in the earth."<sup>80</sup> In *Kelly v. Ohio Oil Co.*,<sup>81</sup> the Supreme Court of Ohio commented on the fugacious nature of oil and gas and the impact of this characteristic on landowners' interests in oil and gas:

Petroleum oil is a mineral, and while in the earth it is part of the realty, and, should it move from place to place by percolation or otherwise, it forms part of that tract of land in which it tarries for the time being, and, if it moves to the next adjoining tract, it becomes part and parcel of that tract.<sup>82</sup>

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<sup>75</sup> See *id.*

<sup>76</sup> LOWE, *supra* note 38.

<sup>77</sup> See, e.g., *People's Gas Co. v. Tyner*, 31 N.E. 59, 60 (Ind. 1892).

<sup>78</sup> Although Pennsylvania currently subscribes to the ownership-in-place theory, the Supreme Court of Pennsylvania explained the wild nature of oil and gas in *Westmoreland & Cambria Natural Gas Co. v. DeWitt*:

Water and oil, and still more strongly gas, may be classed by themselves, if the analogy be not too fanciful, as minerals *ferae naturae*. In common with animals, and unlike other minerals, they have the power and the tendency to escape without the volition of the owner. Their fugitive and wandering existence within the limits of a particular tract was uncertain. They belong to the owner of the land, and are part of it, so long as they are on or in it, and are subject to his control; but when they escape, and go into other land, or come under another's control, the title of the former owner is gone. Possession of the land, therefore, is not necessarily possession of the gas. If an adjoining, or even a distant, owner, drills his own land, and taps your gas, so that it comes into his well and under his control, it is no longer yours, but his.

18 A. 724, 725 (Pa. 1889) (internal citations omitted).

<sup>79</sup> See *Pierson v. Post*, 3 Cai. 175, 177–78 (N.Y. Sup. Ct. 1805) (applying the rule of capture to wild animals in a claim for trespass); Owen L. Anderson, *Subsurface Trespass after Coastal v. Garza*, 60 E. OIL & GAS L. & TAX'N 65, 69 (2009).

<sup>80</sup> LOWE, *supra* note 38, at 29.

<sup>81</sup> 49 N.E. 399, 401 (Ohio 1897).

<sup>82</sup> *Id.* at 401.

Accordingly, under the non-ownership theory, the landowner has an interest in oil or gas only so long as it remains under the landowner's parcel.<sup>83</sup>

In non-ownership states, a landowner's interest in the oil or gas beneath her property is an "exclusive right to reduce them to possession at which time they become personal property and are subject to ownership as such."<sup>84</sup> Prior to extraction, "[o]il and gas in the earth cannot be the subject of an ownership distinct from the soil. They belong to the owner of the land only so long as they remain under the land."<sup>85</sup> Unlike the possessory right held by owners in ownership-in-place jurisdictions, landowners in non-ownership jurisdictions hold an incorporeal right to use the land.<sup>86</sup> This right of "use" includes "the right to reduce the oil and gas to possession or to sever this right for economic consideration."<sup>87</sup>

In non-ownership states, under the rule of capture, oil and gas become personal property once severed from the soil and captured:<sup>88</sup>

[N]o person owns oil and gas until it is produced and any person may "capture" the oil and gas if able to do so. Of course one may not go upon the land of another to effect the capture, so it is necessary to have such an interest in the land upon which a well is drilled for the purpose of capturing the fugitive minerals as will authorize the drilling of the well.<sup>89</sup>

A minority of states—including New York, California, and Ohio—have adopted the non-ownership theory.<sup>90</sup> As this theory stems from the rule of capture—and is essentially the only way a landowner may reduce oil and gas to possession—each state subscribing to the non-ownership

<sup>83</sup> See, e.g., *Triger v. Carter Oil Co.*, 23 N.E.2d 55, 56 (Ill. 1939) ("[O]il and gas in place are minerals but by reason of their fugacious qualities they are incapable of ownership distinct from the soil. They belong to the owner of the land only so long as they remain under the land.").

<sup>84</sup> Michelle D. Baldwin, Note, *Ownership of Coalbed Methane Gas: Recent Developments in Case Law*, 100 W. VA. L. REV. 673, 676 (1998) (quoting J. THOMAS LANE, *COAL, OIL AND GAS* 29, 30 (1996)).

<sup>85</sup> *Transcon. Oil Co. v. Emmerson*, 131 N.E. 645, 649 (Ill. 1921).

<sup>86</sup> See *LOWE*, *supra* note 38, at 31.

<sup>87</sup> *NCNB Tex. Nat'l Bank, N.A. v. West*, 631 So. 2d 212, 223 (Ala. 1993) (quoting *Sun Oil Co. v. Oswell*, 62 So. 2d 783, 787 (Ala. 1953)); see *La. Land & Exploration Co. v. Donnelly*, 394 F.2d 273, 276 (5th Cir. 1968) ("[P]roperty interest [in oil and gas] is the right to reduce the minerals to possession.").

<sup>88</sup> See *WILLIAMS & MEYERS*, *supra* note 32, § 203.1.

<sup>89</sup> *Id.*

<sup>90</sup> See *id.* § 203. In some states, the non-ownership theory is adopted through the courts' interpretation of ownership rights; in others, such as Louisiana, state legislatures have enacted statutes adopting the doctrine. See, e.g., *LA. REV. STAT. ANN.* § 31:5 (2000).

theory also recognizes the rule of capture.<sup>91</sup> Furthermore, non-ownership jurisdictions protect the correlative rights of landowners who have an interest in a common reservoir.<sup>92</sup> In *Ohio Oil Co. v. Indiana*,<sup>93</sup> the Supreme Court opined that while the public at large does not have an interest in a common reservoir underlying the lands of a limited group of landowners, these landowners are “collective owners” of the oil and gas and each has a “coequal right . . . to take from [the] common source of supply.”<sup>94</sup> The Court confirmed the power of the legislature to protect common property and prevent economic waste.<sup>95</sup>

### III. A LEGAL REMEDY: SUBSURFACE TRESPASS

Though the rule of capture limits landowners’ legal rights against other landowners who extract oil and gas from common reservoirs, the process of hydraulic fracturing may differ from other drilling processes and therefore provide for alternative theories of liability. Various courts and legal scholars suggest that subsurface trespass, conversion, private nuisance, and negligence may provide theories of liability and relief to landowners who do not consent to the hydraulic fracturing of their mineral estates.<sup>96</sup> This Note focuses exclusively on subsurface trespass. As previously discussed, the rule of capture shields liability for drainage from a common reservoir unless an improper means of extraction is used or the extracting landowner commits waste<sup>97</sup>; trespass is such an improper means.

#### A. *Trespass*

The common law tort definition of trespass is “an unauthorized and direct breach of the boundaries of another’s land.”<sup>98</sup> The trespass must be a physical invasion.<sup>99</sup> Trespassers are liable where the “intrusion has been intentional, negligent, or the result of an abnormally dangerous activity in which he is engaged.”<sup>100</sup> Notably, the trespasser’s intended re-

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<sup>91</sup> See WILLIAMS & MEYERS, *supra* note 32, § 203.1.

<sup>92</sup> *E.g.*, *Ohio Oil Co. v. Indiana*, 177 U.S. 190, 209–10 (1900).

<sup>93</sup> *Id.*

<sup>94</sup> *Id.* at 209–10.

<sup>95</sup> *Id.* at 210.

<sup>96</sup> See, *e.g.*, Ragsdale, *supra* note 31, at 341–47.

<sup>97</sup> See *supra* Section II.A.1.

<sup>98</sup> Burney & Hyne, *supra* note 7, § 19.03.

<sup>99</sup> See *Villarreal v. Grant Geophysical, Inc.*, 136 S.W.3d 265, 268–69 (Tex. App. 2004) (holding the acquisition of geophysical data through three-dimensional testing does not constitute trespass because no physical invasion occurred).

<sup>100</sup> Burney & Hyne, *supra* note 7, § 19.03 (quoting RESTATEMENT (SECOND) OF TORTS § 329 (1965)).

sult is unimportant under tort law.<sup>101</sup> Landownership bestows both rights and duties on landowners.<sup>102</sup> Each “landowner has a legal right that others shall not enter on or harm the land or take or interfere with the oil and gas under the land by operations conducted on the land.”<sup>103</sup> Arguably, drilling directional wells and injecting fluids for secondary recovery operations (like the hydraulic fracturing process itself) interferes with landowners’ property rights.<sup>104</sup> In application, “the incursion of hydraulic fracturing fluid and proppants into another’s land . . . below the surface constitutes a trespass for which the minerals owner can recover damages equal to the value of the royalty on the gas thereby drained from the land.”<sup>105</sup> Hydraulic fracturing operations on one estate may involve fracturing and injecting frac fluid into the subsurface estate of adjoining landowners.<sup>106</sup>

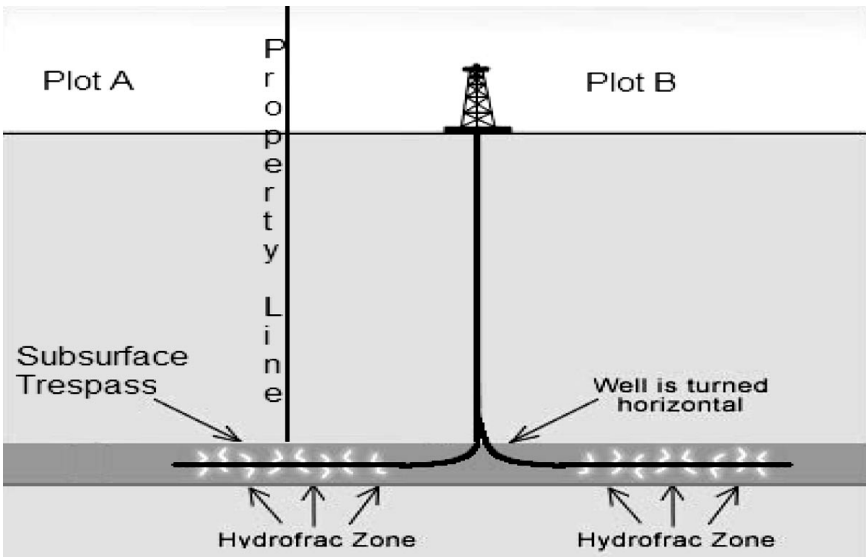


FIGURE 1: ILLUSTRATION OF HYDRAULIC FRACTURING AND SUBSURFACE TRESPASS. Modified from MARYLAND GEOLOGICAL SURVEY, *Marcellus Shale and Natural Gas in Western Maryland*, <http://www.mgs.md.gov/geo/marcellus.html> (last visited Sept. 14, 2011).

<sup>101</sup> See Eduardo M. Peñalver, Professor of Law, Cornell Law School, Remarks at the Cornell Law School 2011 Energy Conference: Gas Drilling, Sustainability & Energy Policy (Apr. 2, 2011), <http://streams.lawschool.cornell.edu/mediasite/Viewer/?peid=48442bc606ca4e4db47b32bdaae657e61d>.

<sup>102</sup> See *id.*

<sup>103</sup> 1 W.L. SUMMERS, OIL AND GAS § 2.1 (3d ed. 2004).

<sup>104</sup> See Burney & Hynes, *supra* note 7, §19.03.

<sup>105</sup> Coastal Oil & Gas Corp. v. Garza Energy Trust, 268 S.W.3d 1, 9 (Tex. 2008).

<sup>106</sup> See *id.*

Figure 1 illustrates two possible trespass claims that could result from a hydraulic fracturing operation.<sup>107</sup> First, trespass may occur when the drill enters the adjoining landowner's property via slant or directional drilling. Second, when frac fluid is injected and pressure applied, the frac fluid may enter and cause fractures in the adjoining landowner's subsurface mineral estate: here the entry of the frac fluid may constitute trespass. Because modern surveying and fracturing technology allow drillers to measure and predict the volume, length, and direction of the fracture,<sup>108</sup> courts may find a resulting subsurface trespass occurred intentionally or negligently.<sup>109</sup>

### B. *Subsurface Trespass Caused by Hydraulic Fracturing*

Although the physical elements of a trespass may be present, some courts—often for policy reasons—are reluctant to find an actionable trespass.<sup>110</sup> Without an actionable trespass claim, claimants are unable to recover regardless of whether the trespass was caused intentionally or negligently, or whether the landowner sustained damages.<sup>111</sup>

In the seminal case *Coastal Oil & Gas Corp. v. Garza Energy Trust*,<sup>112</sup> the Texas Supreme Court was asked to address “whether subsurface hydraulic fracturing of a natural gas well that extends into another’s property is a trespass for which the value of gas drained as a result may be recovered as damages.”<sup>113</sup> In this case, mineral estate lessee Coastal Oil & Gas Corporation (Coastal) drilled a well only 467 feet from the adjoining property which belonged to respondents.<sup>114</sup> Coastal engineers designed the frac job to reach over 1,000 feet from the Coastal well.<sup>115</sup> Respondents brought an action claiming subsurface trespass and resultant loss of mineral royalties.<sup>116</sup> The parties agreed that the hydraulic and propped lengths exceeded Coastal’s property boundary but disagreed as to whether the effective length did.<sup>117</sup> The court ultimately ruled on a peripheral standing issue and did not decide the tres-

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<sup>107</sup> See *supra* Figure 1 for an illustration of subsurface trespass resulting from hydraulic fracturing.

<sup>108</sup> See Kappel, *supra* note 19.

<sup>109</sup> Although subsurface trespass may occur unintentionally, intent and negligence are relevant to the determination of recoverable damages. See EUGENE KUNTZ, A TREATISE ON THE LAW OF OIL AND GAS § 11.9 (1993).

<sup>110</sup> See *Coastal*, 268 S.W.3d at 9.

<sup>111</sup> See *id.*

<sup>112</sup> 268 S.W.3d 1 (Tex. 2008).

<sup>113</sup> *Id.* at 4.

<sup>114</sup> *Id.* at 6.

<sup>115</sup> *Id.* at 7.

<sup>116</sup> *Id.*

<sup>117</sup> *Id.*



pass issue.<sup>118</sup> However, in dicta, the court noted that the rule of capture precluded recovery in this case.<sup>119</sup> Engineers anticipated with near certainty that the fluids would travel under respondents' property, and the parties agreed that fluids had likely crossed boundary lines.<sup>120</sup> Despite this record, the court applied the rule of capture:

[The rule of capture] gives a mineral rights owner title to the oil and gas produced from a lawful well bottomed on the property, even if the oil and gas flowed to the well from beneath another owner's tract. The rule of capture is a cornerstone of the oil and gas industry and is fundamental both to property rights and to state regulation.<sup>121</sup>

The court provided four reasons why the rule of capture, rather than trespass, governs hydraulic fracturing:

First, the law already affords the owner who claims drainage full recourse. This is the justification for the rule of capture, and it applies regardless of whether the drainage is due to fracing . . . .

Second, allowing recovery for the value of gas drained by hydraulic fracturing . . . assumes that the gas belongs to the owner of the minerals in the drained property, contrary to the rule of capture . . . .

Third, determining the value of oil and gas drained by hydraulic fracturing is the kind of issue the litigation process is least equipped to handle. One difficulty is that the material facts are hidden below miles of rock, making it difficult to ascertain what might have happened. Such difficulty in proof is one of the justifications for the rule of capture . . . .

Fourth, the law of capture should not be changed to apply differently to hydraulic fracturing because no one in the industry appears to want or need the change.<sup>122</sup>

The third and fourth reasons that the court gives suggest that the political strength of the oil and gas industry in Texas and public policy favoring this industry motivated the court's rationale.<sup>123</sup> The court found both that hydraulic fracturing was "essential," not "optional," to the recovery of oil and gas, and that it could not be performed to both maximize com-

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<sup>118</sup> See *id.* at 12–13.

<sup>119</sup> *Id.*

<sup>120</sup> *Id.* at 7.

<sup>121</sup> *Id.* at 13.

<sup>122</sup> *Id.* at 14–16.

<sup>123</sup> See *id.* at 16–17.

mercial effectiveness and at the same time minimize drainage.<sup>124</sup> Contrary to these assertions, proof of fracture is available and records documenting surveys of the fracture are even required in some states.<sup>125</sup> While surveying and predicting the length and volume of fractures was difficult and inaccurate when hydraulic fracturing was first adopted, modern technology makes these predictions more accessible, accurate, and affordable.<sup>126</sup>

In crafting its analysis in favor of Texas public policy, the *Coastal Oil & Gas Corp.* court improperly applied the rule of capture. The rule of capture does not function to shield against *all* liability for gas recovered from a common reservoir.<sup>127</sup> As Justice Johnson noted in his partial dissent: “The rule of capture precludes liability for capturing oil or gas drained from a neighboring property ‘whenever such flow occurs solely through the operation of natural agencies in a normal manner, as distinguished from artificial means applied to stimulate such a flow.’”<sup>128</sup> Where a trespass enables the capture of oil or gas, the rule of capture does not apply and the capturer is liable for trespass to the aggrieved landowner.<sup>129</sup>

#### IV. ANALOGICALLY SIMILAR PROCESSES

Due to the relatively recent introduction of hydraulic fracturing to the Marcellus Shale region, the most relevant precedent comes from Texas and other oil producing states.<sup>130</sup> If states in the Marcellus Shale

<sup>124</sup> *Id.*

<sup>125</sup> See SUMMERS, *supra* note 103, § 2.2 (“In some oil-producing states, the regulations of conservation agencies require producers to make directional surveys of wells and to preserve records of these surveys. By using this information, a landowner or lessee can discover if land has been subject to subsurface trespass by adjoining owners through directional or slant drilling.”).

<sup>126</sup> See *id.*; Kappel, *supra* note 19.

<sup>127</sup> See *Coastal Oil*, 268 S.W.3d at 17 (“It should go without saying that the rule of capture cannot be used to shield misconduct that is illegal, malicious, reckless, or intended to harm another without commercial justification, should such a case ever arise.”).

<sup>128</sup> *Id.* at 42 (Johnson, J., dissenting) (quoting *Peterson v. Grayce Oil Co.*, 37 S.W.2d 367, 370–71 (Tex. Civ. App. 1931), *aff’d*, 98 S.W.2d 781 (Tex. 1936)).

<sup>129</sup> See Peñalver, *supra* note 101. Alluding to *Pierson v. Post* (3 Cai. 175, 177–78 (N.Y. Sup. Ct. 1805)), Professor Peñalver suggests that the rule of capture should apply to hydraulic fracturing just as it would to wild animals: the rule of capture does not shield a hunter from liability for shooting a deer while on his neighbor’s property. Trespass law would apply and the capture would be wrongful conversion. See *id.*

<sup>130</sup> See John W. Broomes, *Wrestling with a Downhole Dilemma: Subsurface Trespass, Correlative Rights, and the Need for Hydraulic Fracturing in Tight Reservoirs*, 53 ROCKY MTN. MIN. L. INST. §§ 20.01–20.02 (2007) (identifying Texas as the first state to recognize hydraulic fracturing as a potential trespass). Note that Texas subscribes to the ownership-in-place doctrine. Therefore, application of the rule of capture may (and arguably should) vary from that of non-ownership jurisdictions such as New York. See *supra* Section II.B for a discussion of the ownership-in-place doctrine.

region apply and interpret trespass law similarly to Texas and other traditional oil producing states, courts likely will not find an actionable trespass.<sup>131</sup> However, as of yet, there is no case law in the Marcellus Shale region specifically holding in favor or against a hydraulic fracture subsurface trespass claim. The lack of legal precedent leaves New York state courts free to apply historical ownership theories, to interpret statutory laws and public policy, and to analogize hydraulic fracturing with other processes that courts have found constitute actionable trespass claims.

Thus, New York courts may review *de novo* the issues that hydraulic fracturing implicates—including how to treat the effects of such drilling. In examining property rights, courts should consider processes that are analogically similar to hydraulic fracturing such as slant drilling or directionally drilled wells, the injection of fluids for secondary recovery and storage operations, and the extension of underground coal mine seams.

#### A. *Directional Drilling*

Directional drilling, also referred to as slant drilling, has long been held a clear example of subsurface trespass.<sup>132</sup> Directional drilling occurs when a well is drilled on the surface of the landowner's property and either intentionally or inadvertently deviates from a vertical line and bottoms on an adjoining landowner's property.<sup>133</sup> Courts uniformly have held that because directional drilling involves an unauthorized, direct, and physical intrusion, an actionable trespass exists.<sup>134</sup> Any oil or gas produced from such a "slant drilled" well was obtained through conversion and the trespasser-tortfeasor is generally liable for the value of the oil or gas produced.<sup>135</sup> Where the trespass is committed in good faith, liability is "subject to a deduction for the reasonable costs of production."<sup>136</sup>

Although no court directly has held that hydraulic fracturing presents an actionable subsurface trespass, several courts have analogized the process to directional drilling.<sup>137</sup> In 1961 in *Gregg v. Delhi-*

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<sup>131</sup> See *Coastal Oil*, 268 S.W.3d at 41 (Willett, J., concurring) (concluding that courts should avoid permitting trespass liability in an oil-producing state like Texas because it would cause "real and acute" dampening effects on the economy).

<sup>132</sup> See *Pan Am. Petroleum Corp. v Orr*, 319 F.2d 612, 612 (5th Cir. 1963); *Hastings Oil Co. v. Tex. Co.*, 234 S.W.2d 389, 390–91 (Tex. 1950).

<sup>133</sup> See *Summers*, *supra* note 103, § 2.3.

<sup>134</sup> See *KUNTZ*, *supra* note 109, § 11.9; *SUMMERS*, *supra* note 103, § 2.3.

<sup>135</sup> *Broomes*, *supra* note 131, § 20.03.

<sup>136</sup> *Id.*

<sup>137</sup> See *Coastal Oil & Gas Corp. v. Garza Energy Trust*, 268 S.W.3d 1, 13–15 (Tex. 2008); *Gregg v. Delhi-Taylor Oil Corp.*, 337 S.W.2d 216, 221 (Tex. Civ. App. 1960), *aff'd*, 344 S.W.2d 411 (Tex. 1961).

*Taylor Oil Corp.*,<sup>138</sup> the Texas Supreme Court compared the claimed hydraulic fracture trespass to one resulting from slant drilling.<sup>139</sup> While in this case, as in most hydraulic fracturing subsurface trespass cases, the drill bit was not alleged to have entered the land of the non-consenting landowner, the court determined that “the same result is reached if in fact the cracks or veins extend into its land and gas is produced therefrom . . . .”<sup>140</sup> While the court did not determine whether the alleged trespass constituted subsurface trespass,<sup>141</sup> this case demonstrates the analytical and physical similarities between directional drilling and hydraulic fracturing.<sup>142</sup>

For over thirty years, *Gregg* “stood as the only reported judicial pronouncement on hydraulic fracture subsurface trespass.”<sup>143</sup> Finally, in the monumental *Coastal Oil & Gas Corp.* case in 2008,<sup>144</sup> the Supreme Court of Texas addressed in dicta whether “hydraulic fracturing that extends beyond one’s property is . . . different from drilling a deviated or slant well.”<sup>145</sup> The court explicitly rejected the possible analogy between slant drilling and hydraulic fracturing.<sup>146</sup> In explaining the rationale for application of the rule of capture, the court remarked that the each landowner’s ability to drill her own well to protect against drainage mitigated the risks that the application of the rule presented.<sup>147</sup> The court compared slant drilling and hydraulic fracturing, stating:

The gas produced through a deviated well does not migrate to the wellbore from another’s property; it is already on another’s property. The rule of capture is justified because a landowner can protect himself from drainage by drilling his own well, thereby avoiding the uncertainties of determining how gas is migrating through a reservoir. It is a rule of expedience. One cannot protect against drainage from a deviated well by drilling his own well; the deviated well will continue to produce his gas. Nor is there any uncertainty that a deviated well is producing another owner’s gas. The justifi-

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<sup>138</sup> 344 S.W.2d 411 (Tex. 1961).

<sup>139</sup> *See id.* at 414–17.

<sup>140</sup> *Id.* at 416.

<sup>141</sup> *Id.* at 417. The primary issue in this case was jurisdiction. *See id.* at 416–17.

<sup>142</sup> *Id.* at 414–17.

<sup>143</sup> Ragsdale, *supra* note 31, at 340.

<sup>144</sup> *Coastal Oil & Gas Corp v. Garza Energy Trust*, 268 S.W.3d 1, 13 (Tex. 2008).

<sup>145</sup> *Id.* at 13.

<sup>146</sup> *Id.* at 13–14.

<sup>147</sup> *See id.*

cations for the rule of capture do not support applying the rule to a deviated well.<sup>148</sup>

Here, the court misconstrued what should have been a sequential analysis. Rather than looking at whether the rule of capture applied, the court first should have looked at whether a trespass occurred. Justice Johnson's partial dissent recognizes this logical fallacy and notes several reasons why slant drilling and hydraulic fracturing are analogous.<sup>149</sup> First, "both involve a lease operator's intentional actions which result in inserting foreign materials without permission into a second lease."<sup>150</sup> Second, both techniques use foreign materials—either the drill bit in the case of slant drilling and frac fluid and proppants in the case of hydraulic fracturing—to drain minerals.<sup>151</sup> Finally, Justice Johnson noted that both slant drilling and hydraulic fracturing result in "capturing" minerals from the first lease.<sup>152</sup>

The current state of subsurface trespass and hydraulic fracturing law in Texas and other longtime commercial oil and gas producing states is indeterminate. Although *Coastal Oil & Gas Corp.* suggests that subsurface invasion by hydraulic fracturing fluids does not constitute an actionable trespass, the court's reasoning is weak, and other cases suggest that an actionable trespass claim does exist.<sup>153</sup> Furthermore, history, outdated technology, and public policy, *rather than legal doctrine*, play an overbearing role in the court's decision.<sup>154</sup> States in the Marcellus Shale region should adopt policies and laws that reflect currently available technology and the prevailing public policy of the area. Although the partial dissent directly addresses the technical elements of both processes, the majority fails to examine the merits of the case and blatantly engages in "results oriented judging," finding in favor of Texas public policy of encouraging oil and gas production at the cost of individual land rights.<sup>155</sup>

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<sup>148</sup> *Id.* at 14 (citations omitted).

<sup>149</sup> *See id.* at 44 (Johnson, J., dissenting); Ragsdale, *supra* note 31, at 339 ("From both a functional and physical perspective, a hydraulic fracture is largely analogous to a directionally drilled well.").

<sup>150</sup> *Coastal Oil*, 268 S.W.3d at 44 (Johnson, J., dissenting).

<sup>151</sup> *Id.*

<sup>152</sup> *Id.*

<sup>153</sup> *See id.*; *Geo Viking, Inc. v. Tex-Lee Operating Co.*, No. D-1678, 1992 WL 80263, at \*2 (Apr. 22, 1992), *withdrawn and superseded*, 839 S.W.2d 797 (Tex. 1992); *Delhi-Taylor Oil Corp. v. Gregg*, 337 S.W.2d 216, 220 (Tex. App. 1960), *aff'd*, 344 S.W.2d 411 (Tex. 1961).

<sup>154</sup> *See Coastal Oil*, 268 S.W.3d at 16–17.

<sup>155</sup> *See Peñalver, supra* note 101.

### B. Secondary Recovery and Storage Operations

Case law involving the injection of fluids into the ground for secondary recovery and storage operations provides a spectrum of decisions related to the law of subsurface trespass.<sup>156</sup> Here—as in the analogy to slant drilling—public policy, support for the oil and gas industry, and increasing demand for inexpensive oil and gas heavily influence and guide courts’ analyses and decisions.<sup>157</sup>

The process of fluid injection bears many similarities to hydraulic fracturing.<sup>158</sup> Subsurface entry of injected fluids typically occurs during: “(1) . . . an enhanced recovery operation ‘to sweep’ hydrocarbons toward producing wells, thereby recovering reserves incremental to primary recovery; (2) pumping salt water into a well to inexpensively dispose of ‘waste’ fluids in a salt water formation; and (3) injecting natural gas into an underground storage.”<sup>159</sup> These processes are similar to hydraulic fracturing where frac fluids and proppants are pumped into the ground.<sup>160</sup> In both situations, it is possible for injected fluids to flow from the injection well into the adjoining subsurface property, amounting to a subsurface trespass.<sup>161</sup> As such, “courts have been asked to enjoin water-flooding projects” and other similar processes “on the basis that the injected water will sweep across lease or unit lines, resulting in an impermissible trespass.”<sup>162</sup>

In *Jameson v. Ethyl Corp.*,<sup>163</sup> the Arkansas Supreme Court addressed whether trespass law, the rule of capture, or nuisance law governed a situation where brine pumped into the ground for secondary recovery purposes caused the movement of bromide from a neighboring tract onto the well operator’s lease.<sup>164</sup> The *Jameson* court balanced public policy, correlative rights, and the rule of capture.<sup>165</sup> The court explained:

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<sup>156</sup> See *Phillips Petroleum Co. v. Stryker*, 723 So. 2d 585, 588–89 (Ala. 1998); *Baumgartner v. Gulf Oil Corp.*, 168 N.W.2d 510, 516 (Neb. 1969) (“[W]here a secondary recovery project has been authorized by the commission the operator is not liable for willful trespass to owners who refused to join the project when the injected recovery substance moves across lease lines.”); *R.R. Comm’n of Tex. v. Manziel*, 361 S.W.2d 560, 568–69 (Tex. 1962) (denying claim of subsurface trespass in favor of correlative rights and public policy).

<sup>157</sup> See *Ragsdale*, *supra* note 31, at 335 (“Due to strong public policies of promoting these types of operations, courts have been cautious in finding liability for injected fluid subsurface entries and in fashioning remedies.”).

<sup>158</sup> *Id.* at 339.

<sup>159</sup> *Id.* at 335.

<sup>160</sup> See N.Y. STATE DEP’T OF ENVTL. CONSERVATION, *Marcellus Shale*, *supra* note 1.

<sup>161</sup> See *Ragsdale*, *supra* note 31, at 335.

<sup>162</sup> *Burney & Hyne*, *supra* note 7, § 19.03.

<sup>163</sup> 609 S.W.2d 346 (Ark. 1980).

<sup>164</sup> See *id.* at 347–49.

<sup>165</sup> See *Burney & Hyne*, *supra* note 7, § 19.03.

A determination that a trespass or nuisance occurs through secondary recovery processes within a recovery area would tend to promote waste of such natural resources and extend unwarranted bargaining power to minority landowners. On the other hand, a determination that the rule of capture should be expanded to cover the present situation could unnecessarily extend the license of mineral extraction companies to appropriate minerals which might be induced to be moved from other properties through such processes and, in any event, further extend the bargaining power of such entities to reduce royalty payments to landowners who are financially unable to 'go and do likewise.'<sup>166</sup>

The court's commentary demonstrates the influence of policy considerations upon judicial decision-making. Although the court remanded the case, not directly addressing whether a trespass occurred, the court did limit application of the rule of capture:

By adopting an interpretation that the rule of capture should not be extended insofar as operations relate to lands lying within the peripheral area affected, we, however, are holding that reasonable and necessary secondary recovery processes of pools of transient materials should be permitted, when such operations are carried out in good faith for the purpose of maximizing recovery from a common pool.<sup>167</sup>

Though other courts have engaged in similar analyses, they have reached vastly different conclusions.<sup>168</sup> For example, in *Baumgartner v. Gulf Oil Corp.*,<sup>169</sup> the Nebraska Supreme Court weighed public policy in support of increasing oil and gas production against the property rights of individual landowners and found in favor of oil and gas production.<sup>170</sup> Specifically, the court stated:

Certainly, it is relevant to consider and weigh the interests of society and the oil and gas industry as a whole against the interests of the individual operator who is damaged; and if the authorized activities in an adjoining secondary recovery unit are found to be based on some

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<sup>166</sup> *Jameson*, 609 S.W.2d at 351.

<sup>167</sup> *Id.*

<sup>168</sup> See *Phillips Petroleum Co. v. Stryker*, 723 So. 2d 585, 588–89 (Ala. 1998); *Baumgartner v. Gulf Oil Corp.*, 168 N.W.2d 510, 516 (Neb. 1969); *R.R. Comm'n of Tex. v. Manziel*, 361 S.W.2d 560, 568–69 (Tex. 1962).

<sup>169</sup> 168 N.W.2d 510 (Neb. 1969).

<sup>170</sup> See *id.* at 517.

substantial, justifying occasion, then this court should sustain their validity.

We conclude that if, in the valid exercise of its authority to prevent waste, protect correlative rights, or in the exercise of other powers within its jurisdiction, the Commission authorizes secondary recovery projects, a trespass does not occur when the injected, secondary recovery forces move across lease lines, and the operations are not subject to an injunction on that basis. The technical rules of trespass have no place in the consideration of the validity of the orders of the Commission.<sup>171</sup>

Here, as in *Coastal Oil & Gas Corp.*, the court identified the elements of subsurface trespass and yet refused to find a legally actionable claim.<sup>172</sup> The court adopted an outcome-centered analysis that it justified through application of the correlative rights doctrine.<sup>173</sup> Arguably, such a policy-driven decision is best left to state legislatures because state legislatures can adopt compulsory integration statutes that advance a similar policy while also correctly applying legal doctrines.

The role of public policy in existing legal precedent suggests that courts in New York and other Marcellus Shale region states also will interpret state laws in a manner that defers to public policy.<sup>174</sup> New York's Environmental Conservation Law § 23-0301 promotes a public policy that protects landowners' individual property rights while also encouraging natural gas production.<sup>175</sup> The statute states:

It is hereby declared to be in the public interest to regulate the development, production and utilization of natural resources of oil and gas in this state in such a manner as will prevent waste; to authorize and to provide for the operation and development of oil and gas properties in such a manner that a greater ultimate recovery of oil and gas may be had, and that the correlative rights of all owners and the rights of all persons including landowners and the general public may be fully protected, and to provide in similar fashion for the underground storage of gas, the solution mining of salt and geothermal, stratigraphic and brine disposal wells.<sup>176</sup>

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<sup>171</sup> *Id.*

<sup>172</sup> See *Coastal Oil & Gas Corp. v. Garza Energy Trust*, 268 S.W.3d 1, 17 (Tex. 2008).

<sup>173</sup> See *Baumgartner*, 168 N.W.2d at 516–17.

<sup>174</sup> See *id.*

<sup>175</sup> See N.Y. ENVTL. CONSERV. LAW § 23-0301 (McKinney 2007).

<sup>176</sup> *Id.*



As written, § 23-0301 can be interpreted to protect individual landowner's property rights.<sup>177</sup> Moreover, public concern and political action opposed to hydraulic fracturing may sway New York state courts to interpret the rule of capture to find an actionable trespass.<sup>178</sup> In 2010, the state legislature passed a bill which provided for a temporary moratorium on new drilling permits.<sup>179</sup> Although the bill was vetoed by then-Governor David Paterson, the Governor issued an executive order banning all high-impact drilling until the Department of Environmental Conservation fully evaluated the fracturing process and its impacts.<sup>180</sup> If § 23-0301 and the recent legislative and executive actions accurately represent New York public policy, New York state courts may interpret the statute to provide legal remedies against trespass via fluid injection and hydraulic fracturing.

### C. *Coal and Coalbed Methane Gas*

Hydraulic fracturing yields physical results distinct from those caused by traditional forms of oil and gas drilling.<sup>181</sup> Fracturing the shale frees oil and gas previously trapped within the shale, allowing it to migrate to the well.<sup>182</sup> Where a well bore or frac fluids cross a boundary line into an adjacent property, causing a fracture in the subsurface shale of the adjacent property, it is the fracture—an action of trespass—that causes oil or gas trapped within the adjacent property to become fugacious.<sup>183</sup> Conversely, other drilling processes generally involve accessing a common underground pool where the gas is already free to migrate within the pool and across property lines.<sup>184</sup> This key distinction makes hydraulic fracturing different from other drilling processes. This distinction was illuminated in *Coastal Oil & Gas Corp.*<sup>185</sup> There, Justice Johnson's partial dissent asserted that the rule of capture applies only to gas which flows naturally between property lines:

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<sup>177</sup> See *id.*

<sup>178</sup> See Assemb. 11443, 2010 Leg., 233rd Sess. (N.Y. 2010), available at [http://assembly.state.ny.us/leg/?default\\_fld=&bn=A11443&term=2009&Summary=Y&Text=Y](http://assembly.state.ny.us/leg/?default_fld=&bn=A11443&term=2009&Summary=Y&Text=Y).

<sup>179</sup> See *id.*

<sup>180</sup> Exec. Order No. 41, 33 N.Y. Reg. 99 (2011), available at <http://www.dos.state.ny.us/info/register/2011/jan12/pdfs/execorders.pdf>.

<sup>181</sup> See N.Y. STATE DEP'T OF ENVTL. CONSERVATION, *Marcellus Shale*, *supra* note 1.

<sup>182</sup> See Burney & Hyne, *supra* note 7, § 19.02.

<sup>183</sup> See *Coastal Oil & Gas Corp. v. Garza Energy Trust*, 268 S.W.3d 1, 44 (Tex. 2008) (Willett, J., concurring); Burney & Hyne, *supra* note 7, § 19.03 (“Under both common law and modern definitions, a trespass occurs if a ‘thing’ physically crosses property boundaries . . . . [T]his definition is satisfied when fracing extends beyond lease or unit lines since fracing inevitably involves a direct, physical intrusion of the pad and propping fluids into the adjoining neighbor’s property.”).

<sup>184</sup> See *Coastal Oil*, 268 S.W.3d at 14.

<sup>185</sup> See *id.*

The rule of capture precludes liability for capturing oil or gas drained from a neighboring property “whenever such flow occurs solely through the operation of natural agencies in a normal manner, as distinguished from artificial means applied to stimulate such a flow.” The rationale for the rule of capture is the “fugitive nature” of hydrocarbons. They flow to places of lesser pressure and do not respect property lines . . . . I would not apply the rule to a situation such as this in which a party effectively enters another’s lease without consent, drains minerals by means of an artificially created channel or device, and then “captures” the minerals on the trespasser’s lease.<sup>186</sup>

In evaluating the purpose and results of hydraulic fracturing, the legislatures and courts of New York and other Marcellus Shale region states should consider adopting a doctrine that fully accounts for the nature of the shale and gas prior to fracture. Because the gas is trapped and non-migratory prior to fracture, gas in the Marcellus Shale is more similar to a solid mineral than fugacious oil or gas.<sup>187</sup> In examining similar physical processes, both the extension of coal mine seams onto neighboring property and the application of the theories of ownership over coalbed methane released during mining operations provide useful comparisons.<sup>188</sup>

### 1. Coal

The rule of capture does not govern ownership of solid minerals.<sup>189</sup> Rather, the ownership-in-place and the non-ownership theories establish ownership rights over solid minerals.<sup>190</sup> In the case of solid minerals, such as coal, determining whether a trespass has occurred is relatively straightforward.<sup>191</sup> As the California Court of Appeal noted: “A person entering within the side lines of the mining claim of another for the purpose of mining the same is *prima facie* a trespasser.”<sup>192</sup> In another case, the California Supreme Court held that an unlawful trespass occurred where “[d]efendants sunk a shaft in their own mine . . . about 290 feet from plaintiff’s line, and by means of crosscuts therefrom to the vein and

<sup>186</sup> *Id.* at 42–43 (Johnson, J., dissenting) (quoting *Peterson v. Grayce Oil Co.*, 37 S.W.2d 367, 370–71 (Tex. Civ. App. 1931), *aff’d*, 98 S.W.2d 781 (Tex. 1936)).

<sup>187</sup> See *LOWE*, *supra* note 38, at 29–30.

<sup>188</sup> See *infra* Section IV.c for a discussion of coalbed methane extraction.

<sup>189</sup> See *LOWE*, *supra* note 38, at 29–30.

<sup>190</sup> *Id.* See *supra* Sections II.b and II.c for a discussion of the ownership-in-place and non-ownership theories.

<sup>191</sup> See *Flagstaff Silver Mining Co. of Utah v. Tarbet*, 98 U.S. 463, 465–66 (1878).

<sup>192</sup> *Wm. H. Hoegee Inv. Co. v. Burton Bros.*, 283 P.2d 314, 317 (Cal. Ct. App. 1955).

drifts therein beneath the surface of the plaintiff's boundaries, they secretly, knowingly, and willfully took from plaintiff's mine ore."<sup>193</sup>

Moreover, while many of the relevant coal mining cases were decided in the early 1900s—a period of high coal demand and use—courts did not bow to claims of necessity, public utility, or driller-error.<sup>194</sup> In *Donovan v. Consolidated Coal Co.*,<sup>195</sup> the plaintiff sued to recover for damages for trespass on coal deposits.<sup>196</sup> The defendant argued that because the trespass was not “willful,” the court should award damages in the amount of the value of the coal while in the ground decreased by the cost of extraction.<sup>197</sup> Taking a hardline approach, the court determined that the trespass was caused by the defendant's negligence and thus the damages were in the amount of the value of the coal.<sup>198</sup> The court did not allow any reduction in the judgment for the cost of extracting the coal.<sup>199</sup> The court specifically held:

No necessity exists for one miner to trespass upon an adjoining owner. If proper maps and plans of the mine are kept and measurements and surveys of the work made, as required by common prudence and the statute, each miner will have no difficulty in confining his operations to his own estate. When, therefore, one miner, in disregard of his duty, invades the property of another, he should not be permitted to profit by his unlawful act . . . .<sup>200</sup>

The court's analytically accurate application of basic trespass law to coal and coal mining suggests that, despite inevitable public policy pressures, courts are able to distinguish between policy and law.<sup>201</sup>

## 2. Coalbed Methane Gas

Although now considered a valuable resource, until the 1930s coalbed methane gas was thought to be merely a dangerous nuisance.<sup>202</sup> Coalbed methane is a result of:

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<sup>193</sup> *Lightner Mining Co. v. Lane*, 120 P. 771, 776 (Cal. 1911).

<sup>194</sup> *See id.*; *Donovan v. Consol. Coal Co.*, 58 N.E. 290, 291–92 (Ill. 1900).

<sup>195</sup> 58 N.E. 290 (Ill. 1900).

<sup>196</sup> *See id.* at 290–91.

<sup>197</sup> *Id.* at 291.

<sup>198</sup> *Id.*

<sup>199</sup> *Id.*

<sup>200</sup> *Id.* at 291–92.

<sup>201</sup> *See id.*

<sup>202</sup> *See* Ronald K. Olson, *Coalbed Methane: Legal Considerations Affecting Its Development as an Energy Resource*, 13 TULSA L.J. 377, 379–80 (1978) (“The ignition of accumulated methane causes most mine explosions.”).

[B]iochemical and bacterial transformation that occurs during the peat state of coal deposition and subsequently by metamorphic processes as buried peat increases in rank to become coal. Because of the fine pore structure of coal and degraded peat, sorptive capacities of such substance are very large so that much of the methane evolved during coalification is held in the peat and in the coal.

. . . .

As a coal seam is mined, the methane migrates to the face of the mining operation and is released into the air.<sup>203</sup>

Release of the methane is dependent on some physical act which changes the natural containment of the gas.<sup>204</sup> The effective containment of coalbed methane is very similar to that of the gas caught in the pores of shale.<sup>205</sup> Since ownership or a similar property interest is requisite to establish a claim of injury, such as trespass or conversion, the similarities between coalbed methane and shale gas make courts' discussion of ownership of coalbed methane gas particularly relevant.<sup>206</sup>

When miners discovered that capturing coalbed methane was possible on a large scale, courts were charged with determining who owned the escaped gas.<sup>207</sup> The first major case to address coalbed methane gas ownership, *United States Steel Corp. v. Hoge*,<sup>208</sup> arose in Pennsylvania, an ownership-in-place state. The Supreme Court of Pennsylvania characterized methane gas ownership in clear ownership-in-place terms:

The fact that gas is of a fugacious character does not prevent ownership in it from being granted prior to its being reduced to possession . . . . Gas is a mineral, though not commonly spoken of as such, and while in place it is part of the property in which it is contained, as is the case with other minerals within the bounds of a freehold estate.<sup>209</sup>

Following this application of the ownership-in-place theory, the court specifically applied the ownership-in-place doctrine to methane gas:

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<sup>203</sup> *Id.* at 379–80 (internal citations omitted).

<sup>204</sup> *See id.* at 379.

<sup>205</sup> *See* Burney & Hyne, *supra* note 7, § 19.02.

<sup>206</sup> *See* U.S. Steel Corp. v. Hoge, 468 A.2d 1380, 1383–84 (Pa. 1983). This Note will not address trespass of methane gas reserves due to a lack of case law addressing the topic.

<sup>207</sup> *See* Carbon County v. Union Reserve Coal Co., Inc., 898 P.2d 680, 686–87 (Mont. 1995) (applying the ownership-in-place doctrine to methane gas in Montana); *see also* WILLIAMS & MEYERS, *supra* note 32, § 203.

<sup>208</sup> *U.S. Steel Corp.*, 468 A.2d at 1383–84.

<sup>209</sup> *Id.* at 1383.

[S]ubterranean gas is owned by whoever has title to the property in which the gas is resting . . . . In accordance with the foregoing principles governing gas ownership, therefore, such gas as is present in coal must necessarily belong to the owner of the coal, so long as it remains within his property and subject to his exclusive dominion and control.<sup>210</sup>

Thus, the ownership-in-place theory applies to coalbed methane gas in the same way that it applies to other fugitive resources.<sup>211</sup>

Non-ownership states recognize the exclusive right of coal owners to produce coalbed methane gas.<sup>212</sup> The Alabama Supreme Court has twice addressed coalbed methane gas ownership in connection with the non-ownership theory.<sup>213</sup> First, in *Vines v. McKenzie Methane Corp.*,<sup>214</sup> while interpreting the plain meaning of the term “other minerals” in a lease granting rights to coal and other minerals,<sup>215</sup> the court held that “the ownership of methane gas, with the accompanying rights to drill for this substance, was necessarily included” in the lease.<sup>216</sup> In the same year, the court decided *NCNB Texas National Bank v. West*,<sup>217</sup> wherein the Alabama Supreme Court further explained that:

The nonownership [sic] theory of gas ownership, because it recognizes the migratory nature of oil and gas, requires actual possession to establish ownership of the resource, and the right held by the landowner is “the right to reduce the oil and gas to possession or to sever this right for economic consideration.”<sup>218</sup>

In reaching this conclusion, the court noted that methane gas should not be “treated as a resource separate and distinct from other natural gas.”<sup>219</sup>

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<sup>210</sup> *Id.*

<sup>211</sup> See *id.*; WILLIAMS & MEYERS, *supra* note 32, § 203.

<sup>212</sup> See *Vines v. McKenzie Methane Corp.*, 619 So. 2d 1305, 1308–09 (Ala. 1993) (per curiam).

<sup>213</sup> See *id.*; see also *NCNB Tex. Nat’l Bank v. West*, 631 So. 2d 212, 223–24 (Ala. 1993) (per curiam).

<sup>214</sup> 619 So. 2d 1305 (Ala. 1993) (per curiam).

<sup>215</sup> *Id.* at 1306.

<sup>216</sup> *Id.* at 1309.

<sup>217</sup> 631 So. 2d 212 (Ala. 1993).

<sup>218</sup> *Id.* at 223 (quoting *Sun Oil Co. v. Oswell*, 62 So. 2d 783, 787 (Ala. 1953)).

<sup>219</sup> *Id.* at 222. The court stated:

We can find no scientific or legal basis to support the proposition that coalbed methane gas should be treated as a resource separate and distinct from other natural gas, or from any other gas. The fact that the coalbed methane gas is produced by, and stored within, coal seams does not require the conclusion that a grant of “all coal” includes coalbed methane gas, nor does it require the conclusion that a reservation of “all gas” does not include coalbed methane gas. As we said in *Turner v. Lassiter*, “Under the facts of this case: ‘All’ is all. ‘All’ is not ambiguous. ‘All’ is not vague.

Drawn to its logical conclusion, this assumption suggests that non-ownership states likely will determine that shale bed gas is not separate or distinct from other natural gas, therefore requiring actual possession to establish ownership.<sup>220</sup> This assumption presumes that even where artificial means are used to stimulate the flow of gas to facilitate extraction, the coalbed owner has no claim of trespass or conversion as to gas not in physical possession if the gas is captured and extracted by another individual.

In sum, both the ownership-in-place and non-ownership theories provide that absent intentional severance, a person with a property interest in the coalbed also has an interest in the coalbed methane gas.<sup>221</sup> Although states seem to interpret the ownership theories differently, one thing is clear: the characterization of methane gas as a conventional gas greatly affects the outcome of any ownership analysis.<sup>222</sup>

### CONCLUSION

The use of hydraulic fracturing to extract natural gas is worth consideration in light of its potential to facilitate the efficient and profitable extraction of natural gas resources, the development of clean and sustainable energy sources, and the expansion of community employment and industry.<sup>223</sup> However, as the use of hydraulic fracturing expands into states lacking substantial experience in the production of oil and gas, such as the Marcellus Shale region, the rule of capture and laws concerning trespass should be interpreted to reflect and account for legal precedent, the expansion of new, advanced technologies, and regional public policy.

The unique nature of natural gas found in the Marcellus Shale and New York public policy suggest that laws regarding hydraulic fracturing and subsurface trespass in this region should not mirror the laws of Texas and other oil and gas producing states.<sup>224</sup> Reflecting local public policy and related analysis, New York should adopt a more scientifically accurate legal analysis.<sup>225</sup> The development of new technologies has made hydraulic fracturing a cost effective and efficient means of extracting gas

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‘All’ is not of doubtful meaning.” However, careful analysis of the law of real property indicates that the ownership of coalbed gas depends upon its location at the time the gas is recovered or “captured,” at which time it is reduced to possession.

*Id.* at 222–23 (quoting *Turner v. Lassiter*, 484 So. 2d 378, 380 (Ala. 1985)).

<sup>220</sup> *See id.*

<sup>221</sup> *See id.*; *U.S. Steel Corp. v. Hoge*, 468 A.2d 1380, 1383 (Pa. 1983).

<sup>222</sup> *See NCNB Tex. Nat’l Bank*, 631 So. 2d at 222.

<sup>223</sup> *See Navarro, supra* note 5.

<sup>224</sup> *See Coastal Oil & Gas Corp. v. Garza Energy Trust*, 268 S.W.3d 1, 14–17 (Tex. 2008); *see* *Assemb.* 11443, 2010 Leg., 233rd Sess. (N.Y. 2010), *available at* [http://assembly.state.ny.us/leg/?default\\_fld=&bn=A11443&term=2009&Summary=Y&Text=Y](http://assembly.state.ny.us/leg/?default_fld=&bn=A11443&term=2009&Summary=Y&Text=Y).

<sup>225</sup> *See Coastal Oil*, 268 S.W.3d at 44 (Johnson, J., dissenting).

trapped in the Marcellus Shale.<sup>226</sup> The relatively recent introduction of this process to the region frees legislatures and courts from adopting outdated policies that do not reflect proper application of basic legal principles, and the current environmental and political climate.<sup>227</sup>

In the near future New York State courts will have to render decisions regarding hydraulic fracturing and possible subsurface trespass. Specifically, the courts must determine whether “the law of capture includes the right to capture by artificial means or capture by trespass.”<sup>228</sup> In New York, as in other states, prior to the development of commercial oil and gas law, property rights extended from the earth’s core to the limitless sky.<sup>229</sup> As common law developed, New York courts modified the rule of capture to include the basic doctrine of correlative rights.<sup>230</sup> New York subscribes to a modified rule of capture entitling landowners to compensation for the oil and gas located on their properties.<sup>231</sup> Texas, along with most other traditional oil and gas producing states, does not subscribe to a modified rule of capture doctrine like New York; for this and other reasons, such legal precedent presents a poor analytical base upon which to develop New York law addressing hydraulic fracturing and subsurface trespass.<sup>232</sup>

In accordance with New York’s historical application of the non-ownership theory, a modified rule of capture, and Environmental Conservation Law § 23-0301, New York state courts must account for regional differences, technological advances, and public policy.<sup>233</sup> New York state courts should compare hydraulic fracturing with analogically similar processes—such as directional drilling, fluid injected recovery and storage operations, and coalbed methane gas production—and find an actionable subsurface trespass claim where hydraulic fracturing initiated on one property encroaches on the mineral estate of another.

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<sup>226</sup> See N.Y. STATE DEP’T OF ENVTL. CONSERVATION, *Marcellus Shale*, *supra* note 1.

<sup>227</sup> See N.Y. STATE DEP’T OF ENVTL. CONSERVATION, ENVIRONMENTAL IMPACT STATEMENT, *supra* note 9.

<sup>228</sup> *Gregg v. Delhi-Taylor Oil Corp.*, 344 S.W.2d 411, 418 (Tex. 1961).

<sup>229</sup> See *Ragsdale*, *supra* note 31, at 313.

<sup>230</sup> See N.Y. ENVTL. CONSERV. LAW § 23-0301 (McKinney 2007).

<sup>231</sup> See *E.g., id.*; N.Y. COMP. CODES R. & REGS. tit. 6, § 5503; *accord* *Envirogas, Inc. v. Consol. Gas Supply Corp.*, 98 A.D.2d 119, 122 (1983).

<sup>232</sup> See *Stephens County v. Mid-Kansas Oil & Gas Co.*, 254 S.W. 290, 292 (Tex. 1923).

<sup>233</sup> See N.Y. ENVTL. CONSERV. LAW § 23-0301.

